

Dear Sir/Madam,

Re: Call on UNCTAD to withdraw misleading report about Second Generation Biofuel Markets

We are writing to express our serious concerns about UNCTAD's new report "[Second Generation Biofuel Markets: State of Play, Trade and Developing Country Perspectives](#)."¹ The report, published as part of UNCTAD's International Trade and Commodities programme, concludes that "second-generation biofuels have become a commercial reality."²

We consider that the report contains so many factual inaccuracies and misleading claims that its conclusion must be withdrawn. Publicly available information, particularly from the US, shows that technology-related problems with second generation biofuels persist, and that such biofuels are a long way from having become a "commercial reality."

Developing countries' governments need to have access to accurate and reliable information about the state of second generation biofuels technologies and markets. We are deeply concerned that UNCTAD's report misleadingly suggests that these technologies are proven to have a track record of successful operation and use, when in fact, this is not the case. This could lead governments to make scarce public resources available for biorefineries which involve technologies that have a poor track record and are likely to fail. Private investors, too, need accurate information to avoid losing funds from failing second generation biofuel projects.

Below are four examples of the inaccuracies contained in the report:

1) The report presents a list of ten "existing commercial facilities producing second-generation fuels with the highest production capacities" in the US (Table 7). **However, the list contains not a single example that merits such a description.** See the annex for information and citations on these facilities.

Of the ten facilities listed, five are operational plants which use feedstock defined as "first generation" according to the definition adopted in the UNCTAD report. The report states that "first-generation biofuels are derived from seeds, grain or sugars, while second-generation biofuels are produced from lignocellulosic biomass, such as crop residues, woody crops or energy grasses (page 2)." Another plant – which appears to never have used second generation feedstock either – was closed in 2012. One was sold for non-biofuel purposes in 2013, having never used second generation feedstocks. Three are "second generation" cellulosic biofuel refineries, however one of these was shut down in November 2015 and appears to never have been fully operational, and the other two have not been successfully operated to date due to technical problems.

2) A case example highlighted in the report is Solena Fuels (Box 1). The case refers to The GreenSky London project announced by British Airways in 2010, which was meant to see municipal solid waste refined to aviation fuel using Solena's technology. It also refers to discussions between Solena Fuels with city authorities in Chennai, India about a refinery which was to use the same technology and feedstock. The only source mentioned in the report was an unspecified 2015 article in the industry magazine Biofuels Digest.

In fact, Solena filed for bankruptcy in the Maryland Bankruptcy Court in October 2015.³ The conversion process they proposed has never been successfully demonstrated at a commercial (or even larger demonstration plant) scale anywhere in the world and Solena never operated even a small pilot plant, let alone a commercial-scale one. Following Solena's bankruptcy petition, British Airways officially abandoned the GreenSky London project.⁴

3) The report claims that US production of cellulosic ethanol in 2015 was 490.37 million litres (which converts to 107.89 million gallons) representing 25 percent utilization of installed capacity. **However, based on EPA data, cellulosic biofuel plants in the US ran at 2.02% of their installed capacity in 2015, not 25% as the UNCTAD report claims, producing just 2.18 million gallons.**

"The dataset reveals several characteristics about second-generation biofuel production in the US. Of the 115 facilities identified (for all types of advanced biofuels), cellulosic ethanol facilities represented 39 plants, totalling about 1.37 billion litres of installed capacity. Taking a more conservative approach of considering only existing facilities and those under actual construction (thus excluding the proposed cellulosic facilities), this number rounds to 29 facilities with a combined 490.37 million litres [107.87 million gallons] of installed production capacity in the US in 2015."^a

It further states:

"According to Ethanol Producer Magazine (2015), the actual cellulosic production for 2014 amounted to 124.92 million litres [27.48 million gallons], which if compared to UNCTAD's estimated installed capacity in the US as of 2015 gives a utilization rate of approximately 25 percent (EPA, 2015). In comparison, conventional ethanol production capacity for 2014 is estimated at 56.79 billion litres (RFA, 2015b)."⁵

The 2014 cellulosic biofuel production figures published by the US Environmental Protection Agency (EPA) bear no resemblance to the cited figure of 124.92 million litres.⁶ According to the EPA, 728,509 gallons of cellulosic ethanol and 29,445 gallons of cellulosic renewable gasoline blendstock were produced in the US in 2014 – i.e. a total of 757,954 gallons. This is a mere 0.7% of the 107.87 million gallons of installed USA cellulosic biofuel production capacity in 2015 calculated by the authors of the UNCTAD report.

The EPA also classes "Renewable Compressed Natural Gas" and "Renewable Liquefied Natural Gas" as forms of cellulosic biofuels. If those are added to the total, then total "cellulosic biofuel" production was 33.35 million gallons in 2014.

"Renewable Natural Gas" is primarily landfill gas but also includes biogas from livestock, wastewater treatment and other sources.⁷ Landfill gas and biogas from manure or wastewater clearly do not meet the definition of 'second generation biofuels' used in UNCTAD's report. As those production figures were not included in UNCTAD's figures for the total installed cellulosic biofuel capacity in the US, they cannot be counted towards the total capacity used.

a Gallon conversions in square brackets added by the authors of this letter.

4) Although the report acknowledges that algae biomass is not a cost-effective fuel stock, it cites Solazyme Bunge as a company producing biodiesel and jet fuel with algae. **However, Solazyme does not produce any biofuel stock according to the US Securities and Exchanges Commission.**

The report states that “currently, the production of algae biomass is not cost-effective due to numerous technological barriers that must be overcome in order to better exploit the biomass potential” (p.45), yet it cites Solazyme Bunge as an example of a company which “produces biodiesel, renewable diesel and jet fuel with sugarcane and algae.”

Solazyme’s headquarters are in the US and they therefore have to file full reports to the US Securities and Exchanges Commission (SEC). Their SEC filings for 2014 and 2015 clearly show that they are not producing biofuels.⁸ They primarily produce algal oil for skincare products and to a lesser amount for food and drilling oil lubricants – not for biofuels. In fact, since the UNCTAD report was published, Solazyme has changed its name to Terra Via, “a next generation food, nutrition and specialty ingredients company,”⁹ no longer referring to any plans to produce biofuels.

We believe that the inaccuracies and misrepresentations contained in the report are so significant and pervasive that they cannot be addressed through minor edits. The report needs to be withdrawn.

Sincerely,

Biofuelwatch
Center for Biological Diversity
ETC Group
Friends of the Earth U.S.
Global Justice Ecology Project
Institute for Agriculture and Trade Policy
International Center for Technology Assessment

Annex: Facilities listed in Table 7 of the report

Table 7: Existing commercial facilities producing second-generation fuels with the highest production capacities

Facility	2G fuels produced	Million gallons/year	City	State
Dynamic Fuels/REG	Renewable Diesel	62.45	Geismar	Louisiana
Aemetis	Ethanol	45.8	Keyes	California
NatureWorks	Renewable chemicals	30.81	Blair	Nebraska
EcoSynthetix	Renewable chemicals	27.77	Dyersburg	Tennessee
Abengoa	Ethanol	20.82	Hugoton	Kansas
POET-Project Liberty	Ethanol	16.65	Emmetsburg	Iowa
Gevo	Biobutanol	13.32	Luverne	Minnesota
Metabolix	Renewable chemicals	12.49	Clinton	Iowa
LS9	Ethanol	8.33	Okeechobee	Florida
INEOS Bio	Ethanol	6.66	Vero Beach	Florida

Dynamic Fuels/REG: Ordinary biodiesel feedstocks, no evidence that those have been waste only, major technical problems with little successful operation

This is a refinery making HVO biofuels from ordinary biodiesel feedstocks. According to REG the “process converts a wide range of feedstocks, such as animal fat, inedible corn oil, used cooking oil and vegetable oils, into renewable fuel.”¹⁰ The plant was opened by Dynamic Fuels in 2010 but was closed for two years from 2012-14. It was reopened October 2014, closed after a fire in April 2015, reopened and soon after closed following an explosion and fire in which four people were injured.¹¹ REG has not publicly announced the reopening of the plant since the second accident.

Aemetis: First generation corn ethanol refinery

The Keyes facility is a corn ethanol refinery. Aemetis has tested small-scale use of sorghum, which is classed as ‘advanced biofuels’ under US rules. However, it is clearly a grain that falls within UNCTAD’s definition of a “first generation biofuel.” Aemetis state that they envision transitioning to other feedstocks in a ‘multi-year strategy’ and they are carrying out research at their laboratory at the University of Maryland. However, they closed down their only cellulosic ethanol demonstration plant in Butte, Montana in 2011.¹²

NatureWorks: Not biofuels, not second-generation feedstock

This plant is designed to produce bioplastics, not fuels.¹³ Furthermore, it uses corn sugar as the feedstock,¹⁴ which UNCTAD would class as ‘first generation’ if this were a biofuel plant.

EcoSynthetix: Not biofuels, not second-generation feedstock

They have only ever made biopolymers for non-fuel applications. Furthermore, their materials are derived from starch, not from cellulosic biomass.¹⁵

Abengoa: Cellulosic ethanol plant, which has been shut down with no evidence that it ever worked

It was reported in the media in November 2015 that Abengoa shut down the plant, due to their financial problems.¹⁶ According to a news report in March 2015, “[Abengoa] is in pre-insolvency talks with lenders and has until March 28 to win their backing and avoid becoming Spain's largest ever bankruptcy.”¹⁷

Although the plant was officially opened in October 2014, it was still not fully commissioned by July 2015, according to local media.¹⁸ Abengoa had not publicly announced any success with commissioning the plant between July and its closure in November.

POET-DSM: Cellulosic ethanol plant so far not fully commissioned

This is a cellulosic ethanol plant which was officially opened in 2014. Yet, according to DSM's Annual Report 2015 (published 2016), “the startup process for the plant is facing challenges, mainly in the pretreatment section of the plant, similar to other players in the industry.”¹⁹ In December 2015, staff from the California Air Resources Board visited the plant, and their report implies that the plant was not fully operational at that stage.²⁰ In April 2015, DSM had described it as still being in the start-up phase.²¹

Gevo: First generation feedstock

Gevo has been struggling to make biobutanol from corn²² at the Luverne plant, i.e. from a first, not a second generation feedstock. So far, however, they've mainly been producing corn ethanol at the plant.²³

Metabolix: Not biofuels, and plant closed in 2012

They make biopolymers for non-fuel applications only. The Clinton plant was developed as a joint venture with ADM using ADM's facilities. ADM cancelled the joint venture in 2012,²⁴ so there has been no Metabolix plant in Clinton since then.

LS9: Sold to REG for non-fuel speciality chemicals production; always used first-generation feedstock

The LS9 plant converted corn sugar to hydrocarbon fuels, so clearly fell within UNCTAD's definition of a first generation biofuel. LS9 was in fact sold to REG at half of its original investment in 2013²⁵ and REG have had no plans to use the facility in Okeechobee for biofuel production (looking at non-fuel speciality chemicals instead).²⁶

INEOS Bio: Cellulosic biofuels, never successfully operated

Plant officially opened 2013 but could not be fully commissioned because of problems with hydrogen cyanide poisoning the microbes needed for ethanol fermentation. It was closed in January.²⁷ INEOS tried unsuccessfully to restart it in February 2015.²⁸ According to a local

media report, it was still not operational in July 2015,²⁹ and there has been no published report of it having been successfully restarted since then.

- 1 Second Generation Biofuel Markets: State of Play, Trade and Developing Country Perspectives, UNCTAD, February 2016, http://unctad.org/en/PublicationsLibrary/ditcted2015d8_en.pdf
- 2 Advanced Biofuels Set to Play Key Role in Developing Countries, UNCTAD, 23rd February 2016, http://unctad.org/en/pages/newsdetails.aspx?OriginalVersionID=1198&Sitemap_x0020_Taxonomy=UNCTAD%20Home;#1385;#International%20Trade%20and%20Commodities
- 3 Solena Fuels Corporation, Business-Bankruptcies.com, filed 16th October 2015, <https://business-bankruptcies.com/cases/solena-fuels-corporation> and Solena Fuels Corporation, Pacer Monitor, 16th October 2015, https://www.pacermonitor.com/public/case/9613155/Solena_Fuels_Corporation
- 4 BA blames UK government for scrapping of £340m green fuels project, Guardian, 6th January 2016, <http://www.theguardian.com/environment/2016/jan/06/ba-blames-uk-government-for-scrapping-of-340m-green-fuels-project>
- 5 Renewable Fuels Association (RFA) (2015b). Pocket guide to ethanol 2015. Retrieved from http://ethanolrfa.3cdn.net/23d732bf7dea55d299_3wm6b6wwl.pdf
- 6 2014 and 2015 Renewable Fuel Standard data, RIN Generation and Renewable Fuel Volume Production by Fuel Type, 2014 and 2015, <https://www.epa.gov/fuels-registration-reporting-and-compliance-help/2014-renewable-fuel-standard-data> and <https://www.epa.gov/fuels-registration-reporting-and-compliance-help/2015-renewable-fuel-standard-data>
- 7 Renewable Gas (Biomethane) Production, Alternative Fuels Data Center, US Department of Energy, http://www.afdc.energy.gov/fuels/natural_gas_renewable.html
- 8 Solazyme Inc, Form 10-Q (Quarterly Report), filed 11th September 2015 for the period ending 30th September 2015, EDGARpro, <http://files.shareholder.com/downloads/ABEA-673WYL/1677723745x0xS1311230-15-6/1311230/filing.pdf> and Solazyme Inc, Form 10-K (Annual Report), filed 6th March 2015 for the period ending 31st December 2014, EdgarOnline <http://files.shareholder.com/downloads/ABEA-673WYL/1677723745x0xS1555667-15-31/1311230/filing.pdf>
- 9 Solazyme/Terra Via website homepage, accessed 22nd March 2016, <http://solazyme.com/>
- 10 Renewable Energy Group Celebrates Geismar Plant Grand Opening with Ribbon Cutting Ceremony, Business Wire, 19th November 2014, <http://www.businesswire.com/news/home/20141119006734/en/Renewable-Energy-Group-Celebrates-Geismar-Plant-Grand>
- 11 Medical conditions upgraded for burn victims in Renewable Energy Group plant explosion, The Advocate, 4th September 2015, <http://theadvocate.com/news/13356335-123/report-four-injured-in-overnight>
- 12 Securities & Exchange Commission Edgar Filing, AemetisInc, Form: 10K, filed 16th April 2013, http://filings.irdirect.net/data/738214/000135448813002047/amt_x_10k.pdf
- 13 About Natureworks, Natureworks website, <http://www.natureworkslc.com/About-NatureWorks>

- 14 From Plants to Plastics, natureworks website, <http://www.natureworksllc.com/The-Ingeo-Journey/Eco-Profile-and-LCA/How-Ingeo-is-Made>
- 15 Bio-Binders for Use in Composite Wood Products, presentation by Alex Tseitlin and Charles Markessini of Ecosynthetix, 11th October 2013, http://www.forestprod.org/ckfinder/userfiles/files/BioBinders%20for%20Wood%20Composites%20Tseitlin%20and%20Markessini%20Oct%2011th%202013_Rev_1.pdf
- 16 Stevens County official: Abengoa plant shut down, workers laid off, The Garden City Telegram, 4th December 2015, http://www.gctelegram.com/news/local/stevens-county-official-abengoa-plant-shut-down-workers-laid-off/article_ab45d454-9571-5461-befc-d264946fc9c0.html
- 17 Spain's Abengoa seen winning more time for bankruptcy talks, Reuters, 22nd March 2015, <http://www.reuters.com/article/abengoa-bankruptcy-idUSE8N15G009>
- 18 Crews harvest crop residues for biomass, The Garden City Telegram, 5th July 2015, http://www.gctelegram.com/news/local/crews-harvest-crop-residue-for-biomass/article_5c724c5d-9960-530a-b081-2e7d6e671f61.html
- 19 Royal DSM Integrated Annual Report 2015, 1st March 2016, http://www.dsm.com/content/dam/dsm/cworld/en_US/documents/dsm-integrated-annual-report-2015.pdf
- 20 Final Staff Summary Method 2B LCFS Application for the Production of Cellulosic Ethanol from Corn Stover Residue Feedstock at POET-DSM Project Liberty, Emmetsburg, IA (ARB Code: ETHB004), California Environmental Protection Agency Air Resources Board, 29th January 2016, <http://www.arb.ca.gov/fuels/lcfs/2a2b/apps/poet-lib-sum-121715.pdf>
- 21 Royal DSM Integrated Annual Report 2015, 1st March 2016, http://www.dsm.com/content/dam/dsm/cworld/en_US/documents/dsm-integrated-annual-report-2015.pdf
- 22 Gevo Signs Agreement With FCStone to Originate and Supply Corn for Luverne Plant, Gevo News Release, 3rd June 2015, <http://ir.gevo.com/phoenix.zhtml?c=238618&p=irol-newsArticle&ID=2056002>
- 23 Gevo Inc. plans continues production of new biofuel at Luverne, Minn., plant, StarTribune, 24th September 2015, <http://www.startribune.com/gevo-inc-plans-continues-production-of-new-biofuel-at-luverne-minn-plant/328983181/>
- 24 Metabolix Announces Termination of Telles Joint Venture, Metabolix news release, 12th January 2012, <http://ir.metabolix.com/releasedetail.cfm?ReleaseID=639044>
- 25 3 of Synthetic Biology's Failing Biofuels Stocks, Nanalyze, 16th June 2015, <http://www.nanalyze.com/2015/06/3-of-synthetic-biologys-failing-biofuel-stocks/>
- 26 Why the promise of cheap fuel from super bugs fell short, Martin LaMonica, MIT Technology Review, 5th February 2014, <https://www.technologyreview.com/s/524011/why-the-promise-of-cheap-fuel-from-super-bugs-fell-short/>
- 27 INEOS bio plant shut; produced excess deadly gas, VeroNews.com, 15th January 2015, http://www.veronews.com/32963_features/ineos-bio-plant-shut-produced-excess-deadly-gas/article_374a5034-9c04-11e4-ac0f-03e6559b9db4.html

28 New attempts to start up INEOS biofuel plant fail, VeroNews.com, 19th February 2015,
http://www.veronews.com/32963_features/new-attempts-to-start-up-ineos-biofuel-plant-fail/article_2d6cc040-b79a-11e4-9620-975a31306dc3.html

29 INEOS may bring UK waste to Vero, VeroNews.com, 24th July 2015,
http://www.veronews.com/32963_features/ineos-may-bring-uk-waste-to-vero/article_bbe7b9ca-31fb-11e5-aa35-3b4120eba6d2.html